



## **SMI ADVISORY COMMITTEE**

**Charlotte-Mecklenburg Training Academy  
Shopton Road, Charlotte N.C.  
December 07, 2017 – 1:00 P.M.**

### **MINUTES**

*(Proposals contained in these minutes are subject to approval by the North Carolina Criminal Justice Education and Training Standards Commission)*

### **WELCOME**

Dan called the meeting to order at 1:02 PM and welcomed all the members, proxies, and guests to the meeting. Dan also thanked Member Joe Carey for hosting the meeting and recommending a great location for lunch.

### **ROLL CALL**

#### **Members Present**

Joe Carey	Ryan Weeks by proxy of Tim Herring
Ethan Brinn	Bob Overton by proxy of Ken Bumgarner
Fred McQueen	Steve Warren
Stevie McMillan	Anthony Locklear
Dan Worley	

#### **Members Absent**

Bob Stevens	Chris Gaddis
Dub Bridges	

#### **Guests Present**

Thad Condrey, State Highway Patrol

### **APPROVAL OF MINUTES**

Dan reminded the Members that he had submitted to them an electronic copy of the September 07, 2017 minutes of the SMI Advisory Committee meeting at the Criminal Justice Standards Division

office. Dan inquired if any of the Members had revision proposals to the draft minutes and there was none. Member Steve Warren made a motion to accept the draft September 2017 minutes as provided without revision, and was seconded by Member Stevie McMillan. The motion carried unanimously.

## **NC JUSTICE ACADEMY ITEMS – CURRICULUM/TRAINING**

### **Citizen Complaint / Review of Curriculum**

Dan reminded the Committee that he distributed a lengthy complaint from a citizen in North Carolina who had received a speeding citation and was questioning the validity of the training program, as well as the individual operations by the operator on the date in question. While discussions have been occurring on this topic since June of 2017, the distribution of the printed complaint occurred at the September 2017 meeting. Dan advised the Committee that the citizen is/was an electromagnetic engineer and made several arguments based upon technical operation concerns among others. Dan also reminded the Committee that our objective is to take any concerns or complaints seriously, so we can ensure that our training program is adequate in all circumstances, but preferably exceeding the standards of all other states and the Federal model. Dan advised the Committee that he is unsure if the citizen has reviewed the actual North Carolina model or not, but noted that the citizen only identified his source of reference within the complaint as the Federal model, which is published by the National Highway Traffic Safety Administration and is quite dated. Dan reminded the Committee that our program already meets the national model recommendation in all areas, and further exceeds recommendations in most of those.

After providing a copy of the complaint to the Members at the September meeting, Dan asked the Committee to review the complaint, compare it with the current training program, and then return to this meeting with any notations where information provided by the citizen is not already covered in the North Carolina model for RADAR training. Dan then asked the Members present if anyone was able to locate an area of concern that is not already covered in the current North Carolina model.

Member Joe Carey identified that the complaint by the citizen alleges interference caused by a nearby automobile during his enforcement clock, in which the citizen presumed to have been using a RADAR based forward crash avoidance system was the only area he could identify that we do not already discuss during training. Dan agreed with Member Carey stating that the potential interference caused by a RADAR based crash avoidance system was the only area he could find as well that was not specifically identified in the manual already. Dan advised the Committee that in the complaint, the citizen alleges that a Chevrolet Suburban, or like vehicle, was nearby at the time the clock would have been made and that the RADAR based system onboard would have manipulated the officers RADAR to read incorrect readings. Dan advised the Committee that because a forward facing RADAR based anti-collision systems are nothing more than another transmitter of energy, he presumed that the effects would be no different than any other form of radio frequency interference such as nearby radio transmitters, electronic pulses, etc.

However, to further investigate the complaint in its entirety, Dan obtained a General Motors (GM) product with the RADAR based system to conduct testing. A GM product was selected because that was the specific manufacturer alleged by the citizen to have been present in this particular case. Dan advised the Committee that a series of 6 realistic clocks were conducted in both stationary and moving modes while the civilian vehicle had its anti-collision system active with its setting to high, and the speed measuring RADAR was operated according to regulations while measuring the speed. Dan reported to the Committee that there was absolutely no interference on any of the realistic

clocks, and the speeds measured by police RADAR were verified as the exact speeds indicated on the speedometer of the civilian vehicle at that time. To further investigate if radio frequency interference was possible, the patrol car was parked in a vacant parking lot with the speed measuring RADAR activated, while the civilian GM vehicle was then pulled in front of the patrol car (facing the patrol car) with its RADAR based anti-collision system active. Dan noted that when the civilian vehicle slowly approached the patrol car head on, the speed measuring RADAR began to indicate a speed reading of 14 miles per hour with a distinctly odd Doppler tone as the civilian car came to within 20 feet (approximately). Then, as the civilian vehicle grew even closer to within 3 to 5 feet (approximately) of touching the front bumpers, the speed measuring RADAR began to indicate a speed reading of 31 miles per hour with an even more odd Doppler tone. In both of these circumstances, there was no moving vehicles within the transmitted/received beam of energy causing the measurement. Dan advised the Committee that there was nothing observed during the testing of this GM product that causes him concerns on the validity of clocks where civilian GM vehicles were using the RADAR based anti-collision system. Member Carey agreed, further stating that there seems to be absolutely no difference in this interference than any other form of radio frequency interference that we already train the operators to be able to identify and exclude from enforcement clocks. Dan agreed completely with Member Carey, and went on to restate that the only notable inference caused by the anti-collision system occurred when the two transmitting RADARs were within 20 feet of one another at nearly head-on angles – when actual clocks were being conducted, there was absolutely no interference whatsoever, and all clocks were verified as accurate to the exact miles per hour. Dan remarked that our training program requires the operator to observe the target car and form an independent estimate of the speed, while conducting a tracking history of at least 5 seconds where the audible Doppler tone is monitored for abnormalities to help determine, among other things, if errant reflections are being received or erroneous calculations are being displayed. Several Members openly stated that our tracking history requirements, if followed correctly by the operator, are the most stringent in the nation and is designed to exclude the possibility of erroneous enforcement actions. Member Stevie McMillan stated that based upon these tests, he doesn't see where there is an issue at all to be concerned with because the operator would detect that interference to begin with, and most importantly, the only time interference would be detected would be immediately prior to an impending head-on, or near head-on, collision between the patrol car and the civilian car. Several Members openly agreed with Member McMillan.

Dan agreed, but stated that he wanted even more verification so he reached out to the engineers with all of the speed measuring instrument manufacturers. Dan reported to the Committee that he contacted Applied Concepts Inc., Decatur Electronics Inc., MPH Industries Inc., and Kustom Signals Inc. individually to seek input on these topics as they are the only manufacturers listed on the approved for use list in North Carolina at this time. Dan noted that Decatur Electronics was the only manufacturer that had not replied by the time of this meeting. Dan stated that he posed two primary questions to the manufacturer's engineers; (1) when provided a step-by-step expectation of the North Carolina tracking history requirements, are there any additional steps we can possibly require to help establish that all enforcement clocks are accurate and free of interference, and (2), have the manufacturers tested the potential interference possibilities between RADAR based anti-collision systems and a nearby speed measuring RADAR systems, and if so, what were your results of that testing.

For question 1 (when provided a step-by-step expectation of the North Carolina tracking history requirements, are there any additional steps we can possibly require to help establish that all enforcement clocks are accurate and free of interference), of the three replying manufacturers, all stated that our requirements either meet or exceed the requirements provided by the National

Highway Traffic Safety Administration, and they individually had no other additional recommendations on how to make it any more stringent than it already was. One of the manufacturer's executives reported that in their opinion our tracking history requirements was actually "too stringent" and that a complete accurate clock could be established with less requirements than what North Carolina required of our operators. Dan advised the Committee that he felt such a comment was definitely a good thing if our standards are stringent enough to cause a manufacturer's representative to suggest we should actually lower our standard. Dan then confirmed with the Committee that he had no such intent to recommend this Committee consider lowering our standards for the sake of clocking cars quicker, and several of the Members openly agreed.

For question 2 (have the manufacturers tested the potential interference possibilities between RADAR based anti-collision systems and a nearby speed measuring RADAR system, and if so, what were your results of that testing), all three of the responding manufacturers identified individually that when the RADAR based anti-collision systems were being developed, the Federal Communications Commission took into consideration the proper licensing and frequency designations to help prevent signal interference. Through implementation studies and common electromagnetic knowledge, the manufacturers individually reported that no direct interference should occur at any time a speed measuring RADAR system is being used under normal circumstances near passing traffic which may also be utilizing RADAR based anti-collision systems. They did cite that, like any form of wave energy, anytime an overwhelming amount of energy is introduced into the area of the speed measuring RADAR, interference is possible, but the amount of energy required to solicit that response would need to be significant. Dan further exemplified that just because a walkie talkie is inside the patrol car and transmitting does not necessarily mean interference with the RADAR would occur. He went on to say that if you take that same walkie talkie and press transmit but hold it against the antenna, the amount of energy presented to the RADAR unit increases significantly and therefore interference is much more likely. The Members openly agreed that their perspectives were exactly the same as Dan's. Dan stated that all of the manufacturers also agreed that the tracking history requirements placed on operators in North Carolina should clearly identify whenever any interference is present to avoid the erroneous taking of enforcement action. Dan reminded the Committee that this is assuming the operator is properly performing the steps as trained and required by the Administrative Code.

Member Joe Carey stated that it appears this momentary interference caused by the RADAR based anti-collision systems was very similar to the interference caused by some defrost fan reflections we experience from time to time, especially in the Dodge Chargers. Dan agreed with Member Carey and stated it was nearly an identical signature to that of a defrost fan interference. Dan stated the indicated speed coupled with the audio tone was a blatantly obvious erroneous indication just like a defrost fan reflection creates. Member Carey asked if Dan attempted to perform clocks behind or beyond the location of the civilian car with the anti-collision system active to verify that the interference was added in any way to the measurement of the legitimate car being tracked. Dan stated that on one occasion a car was passing in the background and the speed measuring RADAR began to track that car once it was close enough to override the interference created by the anti-collision system that was within 5-10 feet at that time. Member Carey stated that because our program has always been well aware of the key signatures of the presence of interference from defrost fans, it appears this new interference identified by the citizen is already taken into consideration within our program because the operator is trained to monitor that Doppler tone and work through the interference in order to establish clear audio signatures free of fluctuating sounds or the immediate shifts of interference – therefore, even if interference is presented by an anti-collision system that is active and extremely close, the operator is going to recognize that

interference just like he would if it were from a nearby radio tower, or an errant reflection from a defrost fan. Dan agreed with Member Carey that the process to identify and exclude the clock would be exactly the same whether it was radio frequency interference from a radio tower, errant signatures from the defrost fan, or signal absorption from a nearby anti-collision system, but reminded everyone we still do not actually have language in the manual that identifies the vague possibility of interference from the anti-collision systems. Member Ethan Brinn asked Dan if he had tested other vehicle manufacturers systems such as Ford, Chrysler, etc. Dan advised Member Brinn that GM products was the only manufacturer that had been studied for these purposes at this time, but that he was working with both Ford and Chrysler to schedule testing their systems soon. Dan advised the Committee that he hoped to have further information on those systems at the March meeting. Member Brinn went on to state that while we were evaluating this technology as a potential interferon, it would likely be beneficial to include studies utilizing at least the major three automobile manufacturers in the United States such as GM, Ford, and Chrysler as a minimum baseline study. Several of the members openly agreed with Member Brinn, and Dan agreed as well.

Member Anthony Locklear asked Dan if he knew what frequency bands the anti-collision systems were operating on versus the X, K, and Ka bands utilized for speed measurement. Dan advised Member Locklear that was an excellent question, and he too had wondered that as well. Dan advised the Committee that he had submitted an inquiry to the Federal Communications Commission (FCC) to seek licensing information for the anti-collision systems but had not received a response back from the FCC with that information by this meeting. Guest Thad Condrey stated that he found that to be very interesting too considering that anything which transmits microwave energy at the power levels substantial to create shifts in that energy would seemingly have to be licensed by the FCC. Dan agreed, stating that the speed measuring instrument manufacturers had advised him during his discussion with them that the auto manufacturers were assigned special portions of frequencies for the purposes of anti-collisions systems. Dan stated that the instrument manufacturers advised him the frequencies between anti-collision systems and speed measuring systems are so far apart that it is highly unlikely direct signal distortion would ever occur – only signal overload or absorption was possible as discussed earlier in this meeting. However, Dan stated that he could not recollect if the actual frequency range was ever stated by the instrument manufacturer.

Dan stated that the only other item that he initially could not locate in the manual that the citizen raised as an issue was when a RADAR passed under an overpass or bridge that errant reflections could occur. However, Dan stated that in the latter portion of the Basic Principles section the manual does identify that operators should use caution and obtain solid tracking histories to defeat possible interference, and then lists possible sources of momentary interference including bridges. The Committee agreed that this substantially discusses the effect and methodology to ensure errant reflections are not accepted as valid tracking.

Dan asked the Committee if there was any further recommendations on this topic, and there was none. Dan stated that he would attempt to accomplish the testing of the interference with a Ford and Chrysler product before the March meeting, and would also attempt obtain the frequency range for the anti-collision systems as well.

#### **MPH Industries Inc. “SureShot” LIDAR Update**

Dan reminded the Committee that the Commission had asked us about two years ago to work with the manufacturers during the evaluation cycles and to attempt to get issues discovered during initial evaluation reviews fixed or revised prior to the end of the evaluation cycle. If, however, the

revisions could not be handled, the manufacturer would need to resubmit the unit in the following year's evaluation cycle.

Therefore, Dan advised the Committee that Member Ethan Brinn called and discussed some concerns he had with the initial review of the "SureShot." The issues discovered by Member Brinn included the aiming reticle was difficult to see or hold on a target, the volume would not be high enough to hear the tone over passing traffic in a 35 mph zone, and finally, a menu option titled "single shot" would only allow one clock of a car and then it would lock in the speed/range. Member Brinn was concerned that it was essentially an automatic lock feature, as the operator could not perform a solid tracking history. Dan stated that all of the concerns expressed by Member Brinn made sense to him, and so he contacted MPH Industries to determine if a revision to the instrument could be made immediately. Dan stated within 24 hours MPH Industries revised the software to correct these issues identified by Member Brinn, and had version 2 of the "SureShot" shipped to Dan. Dan stated that once version 2 arrived, he issued it to Member Brinn who re-evaluated it and found most of the options correctly revised. He did still recommend that the operator have an option to select different aiming reticles, instead of only having one option. Dan asked other members to review both version one and two of the instruments, and to get with Member Brinn prior to departing with the units so he can explain in greater detail the differences. Member Joe Carey agreed to take the two units as the second reviewer, and stated he would get with Member Brinn for further instructions.

Dan asked if there was any further input on the "SureShot" at this time, and there was none. This discussion is tabled until the March meeting.

#### **Applied Concepts Inc. Motorcycle Display / Kustom Signals Inc. Motorcycle Remote Control**

Dan advised the Committee that both Applied Concepts Inc. and Kustom Signals Inc. both have attachments the Committee needs to review for approval purposes. First, Kustom Signals Inc. has a handheld remote that is applicable to motorcycle applications for the Raptor RP-1. Dan presented the Committee with an example of the remote, and how the functions are the same as the vehicle based Raptor RP-1 remote but the appearance is different. Second, Dan referred the Committee to two different remote displays and remote controls submitted by Applied Concepts Inc. for approval. It is requested that the Committee issue approval for both manufacturers as an attachment only, and as such, they would not be required to undergo instrument evaluation testing and would also not require an Appendix C entry. Dan recommended that the Committee go into recess, inspect the attachments, and then return to forum and make the recommendation to either accept the attachments or deny them. The Committee agreed, and Dan placed the Committee at recess.

Upon returning from an 18 minute recess, the Committee was asked if the units should be considered attachments only, or should they be treated as new instruments altogether requiring a complete instrument evaluation period.

Member Stevie McMillan stated that the **Kustom Signals Inc. Raptor RP-1 motorcycle remote control** is similar enough in appearance and design that lends it to be accepted and approved as an attachment only, and therefore does not require evaluation testing or a separate Appendix C entry. Member Ethan Brinn openly agreed with Member McMillan. Dan asked if any Member had objections to this theory, and there was none.

Member Fred McQueen then stated that the Applied Concepts Inc. motorcycle display and remote control was a completely different unit. Member McQueen identified that the faceplate looks

nothing like the DSR-E or Dual-E, the buttons have different functions, the remote is completely atypical from the standard Stalker remote, and thus should require not only a complete evaluation cycle and separate Appendix C entry, but also issuance of a new instrument title as well. Member Ethan Brinn agreed with Member McQueen stating that the two motorcycle displays presented by Applied Concepts are completely new in almost every aspect, and thus should require its own training session. Member Stevie McMillan agreed, stating that the Stalker motorcycle units would require a completely different sign-off than that of the DSR-E and Dual-E so it should have its own name. Dan confirmed that the Committee was recommending that these two devices be renamed and have its own sign-off and evaluation phase. There was no objection. Dan suggested the scenario that if we elect to make these two devices motorcycle units, how would an instructor handle road testing in the event these units were only purchased for the purposes of motorcycle use? Would the instructor be required to ride on the back of the motorcycle to conduct the testing? Member Anthony Locklear recommended that should approval of this unit occur, the Committee would obviously need to specify that for training and testing purposes the instrument would need to be installed in a car. There was no objection to Member Locklear's recommendation. Dan brought up the fact that the operator manual and instructor manual already requires attendees to provide "a car" and "the instrument" for which they seek certification, but also stated we could consider including language as part of Appendix C that the instrument would need to be trained and tested in an automobile. Dan asked if there was any further discussion to be had on these two topics, and there was none.

Dan confirmed the following instructions provided by the Committee: 1) The Committee accepts the Kustom Signals Inc. Raptor RP-1 motorcycle remote control as an attachment only (does not require an additional evaluation cycle or Appendix C entry) because the function and design are similar in nature and operation to the original automobile design previously approved, and 2) The Committee establishes that the Stalker Dual DSR-E and Stalker Dual-E motorcycle remote displays and remote controls are subject to a completely new evaluation cycle and includes the requirement that a new name/title will need to be established for each version of the unit (directional version vs non-directional version). Dan asked the Committee for any objections to these instructions, and he received none.

## **CJ STANDARDS DIVISION ITEMS – STANDARDS**

### **C.J. Standards Update**

Dan advised the Committee that Mr. Bob Overton had accepted a position with the Department of Public Safety as Deputy Director of Internal Investigations. Dan advised the Committee that former member Overton wished for him to express how appreciative he was for the great relationships he developed serving on the SMI committee, and that he was always just a phone call away if anyone needed him. Dan also advised the Committee that Deputy Director Michelle Schilling is currently filling the position previously held by Bob until a replacement can be seated.

Dan asked Proxy Ken Bumgarner if there was any additional business that needed to be addressed from Criminal Justice Standards, and he advised the Committee that the Director stated they would love to have someone with a SMI background to apply for Bob's vacancy, and to please let anyone know that might be interested in the position.

## **INFORMATIONAL ITEMS**

Commission Meeting Update

Dan reminded the Committee that the RADAR Reliability Act is still in the process of being revised. Dan stated that the SMI Committee made the recommendation back in September of 2017 to revise the law, which was supported by the Commission. It is now with the Attorney General's Office and awaiting the reconvening of the General Assembly for implementation into law.

### **OTHER BUSINESS**

Dan advised the Committee that several members are up for term expirations. They include Members Anthony Locklear, Walter Bridges, Fred McQueen, and Steve Warren. The Committee provided the following recommendations: Steve Warren, Fred McQueen, Walter Bridges, Anthony Locklear, and Ray Evans. These names will be taken into consideration and terms will be issued at the March Meeting.

Dan advised the Committee that the next meeting will be held on March 15, 2018 at 1:00 P.M. It will be held at the North Carolina Justice Academy, Salemburg N.C. and the host Member Dan Worley.

### **Evaluation Instrument Redistribution**

Dan reminded the Committee that any returned evaluation units should be reissued to someone else. Dan documented the serial numbers and also which members obtained the exchanged units.

### **Other Business to Address?**

There was no other business addressed.

### **ADJOURNMENT**

A motion was made by Member Ethan Brinn to adjourn the meeting at 2:18pm. The motion was seconded by Member Joe Carey. The motion carried unanimously.